

AMENDMENT UNDER 37 C.F.R. § 1.116

U.S. Appln. No.: 09/914,835

Attorney Docket No.: Q66019

REMARKS

Claim 1 has been canceled.

No new matter has been added and entry of the Amendment is respectfully requested.

Upon entry of the Amendment, claims 2-4 and 6-11 will be all the claims pending in the application.

Claims 1-4 and 6-11 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Li et al.

Applicants respectfully submit that the present claims are novel and patentable over Li et al for at least the following reasons. Claim 1 has been canceled.

1. The Present Invention Is Not Anticipated By Li et al

Li et al discloses that the coating composition may contain $F(CF_2)_gCH_2CH_2Si(CH_3)_hZ_{3-h}$ wherein Z is chloro, methoxy or ethoxy; a reactive group containing polymer, and $M(Y)_p$ wherein M is a metal selected from the group consisting of titanium, aluminum, zirconium, boron, tin, indium, antimony, and zinc, and Y is selected from the group consisting of C_1-C_{10} alkoxy and acetylacetonato (col. 8, lines 47-55; col. 2, lines 53-59; and col. 6, lines 49-59).

However, none of the working examples of Li et al contains a metal alkoxide (A) or a fluorine-containing compound containing a functional group represented by (B) as required by independent claims 2 and 9. For example, Example 1 of Li et al contained a polymer having a functional group (Step 1, Charge 2), but the acid catalyzed hydrolysis and condensation products of the various water-silane monomers in Step 2 are not within the scope of the claimed metal alkoxide (A). Further, FLUORAD FC-430 is an ester surfactant and the ester group contained in

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FLUORAD FC-430 is non-reactive. Therefore, FLUORAD FC-430 is not within the scope of the claimed fluorine-containing compound containing a functional group represented by (C).

Because Li et al. fails to disclose each and every element of independent claims 2 and 9,

Applicants respectfully submit that Li et al does not anticipate the present claims.

2. The Present Invention Is Not Obvious Over Li et al

The present invention provides an organic-inorganic hybrid material which imparts durability while maintaining sufficient water repellency, oil repellency, stain blocking property and soil releasability before and after cleaning (page 41, lines 2-6 of the specification).

As shown in Tables B and C at pages 39-40 of the specification, Comparative Examples 1, 3 and 5 (which did not contain a metal alkoxide component) and Comparative Examples 2, 4 and 6 (which did not contain a fluorine-containing compound having a functional group reactive with the metal alkoxide) provided (before cleaning) one or more of water repellency, oil repellency, SB and soil releasability properties inferior to those of Examples 1 to 6 of the invention containing the organic-inorganic hybrid material. The effects of the invention, however, are remarkable when comparing the results after cleaning five times. Notably, the Comparative Examples lost almost all of their water repellency, oil repellency and soil releasability property.

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Tables B and C of the specification are reproduced below.

Table B

		Example						Comparative Example					
		1	2	3	4	5	6	1	2	3	4	5	6
Inorganic component	TMSM	○	○	○	○	○	○	-	○	-	○	-	○
	TEOS	○	○	○	○	○	○	-	○	-	○	-	○
Organic component	PMA	○	○	○	○	○	○	○	-	○	-	○	-
	Fluorine-containing compound	○	○	○	○	○	○	○	-	○	-	○	-
	MMA	○	○	○	○	○	○	○	○	○	○	○	○
Crosslinking agent		○	○	-	-	-	-	○	○	-	-	-	-
Emulsifier		-	-	-	-	○	○	-	-	-	-	○	○

Table C

		Example						Comparative Example					
		1	2	3	4	5	6	1	2	3	4	5	6
Before cleaning	Water repellency	50	50	50	50	50	50	30	0	30	0	30	0
	Oil repellency	3	3	3	3	3	3	2	0	2	0	2	0
	SB property	10	10	10	10	10	10	10	3	10	3	10	3
	Soil releasability (%)	80	80	77	77	77	77	43	29	37	20	37	20
After cleaning (5 times cleaning)	Water repellency	50	50	50	50	50	50	0	0	0	0	0	0
	Oil repellency	3	3	3	3	3	3	0	0	0	0	0	0
	SB property	10	10	10	10	10	10	10	0	10	0	10	0
	Soil releasability (%)	77	77	74	74	74	74	14	0	14	0	14	0
	Fluorine residual ratio (%)	95	95	95	95	95	95	5	-	5	-	5	-
Knoop hardness		33	33	30	30	28	28	22	33	10	30	10	29

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Therefore, although a surface treatment agent of the present invention could conceivably be prepared by picking and choosing from various optional components disclosed by Li et al, there is no teaching, suggestion or instruction to one of ordinary skill to make the specific combination of the present invention. Accordingly, Applicants respectfully submit that the present invention provides unexpectedly superior results to Li et al and therefore is patentable over Li et al.

As to present claim 10 which further requires a metal chelating compound, the Examiner again cites Li et al's compound $M(Y)_p$ at the bottom of col. 6, where Y is acetylacetonate. However, in order to achieve the invention of present claim 10, one would have to add both of a first compound where Y is alkoxy and a second compound where Y is acetylacetonate. There is nothing in Li et al which suggests that both such compounds could or should be added, or that such combination would provide the effect of the invention as described at page 14, lines 19-25 of the specification. Accordingly, Applicants respectfully traverse the rejection of claim 10 for this reason, independently.

In view of the foregoing, Applicants respectfully submit that the present invention is not anticipated or rendered obvious by Li et al and the rejection should be withdrawn.

In view of the above, reconsideration and allowance of claims 2-4 and 6-11 are now believed to be in order, and such actions are hereby solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER



Fang Liu
Registration No. 51,283

Date: July 21, 2004